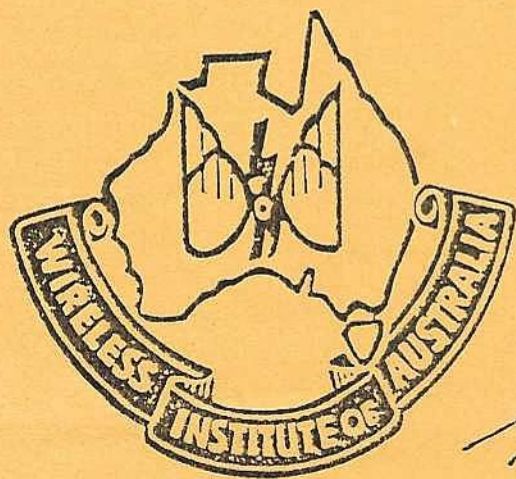
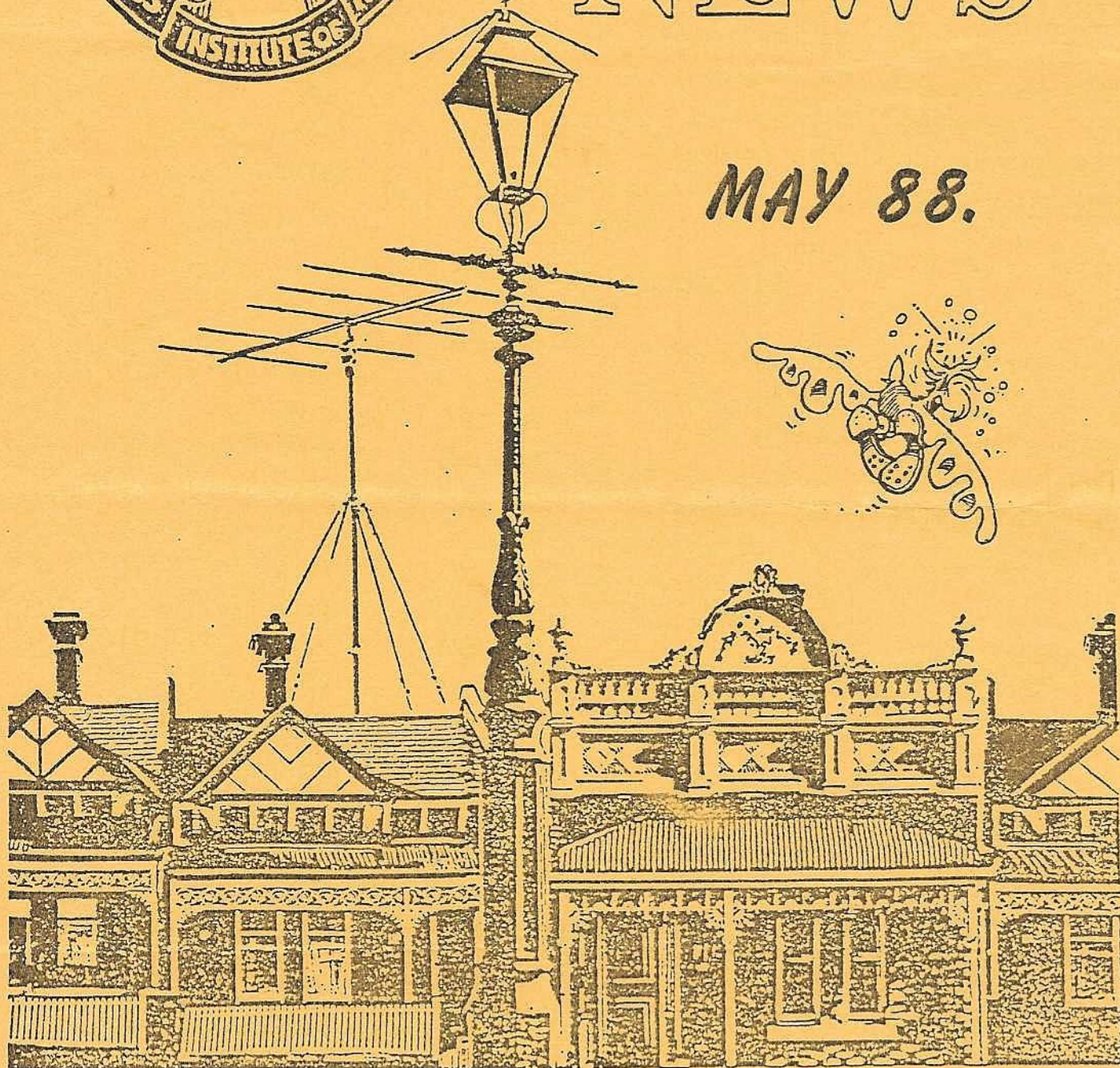


88/05 01



B·A·R·G NEWS

MAY 88.



© Monthly Newsletter of the
Ballarat Amateur Radio Group

REGISTERED BY AUSTRALIA POST, PUBLICATION NO. V3H3397

BALLARAT AMATEUR RADIO GROUP INCORPORATED. OFFICERS 1987-88.

EXECUTIVE COMMITTEE.

			<u>Home</u>	<u>Business</u>
<u>PRESIDENT</u>	Ron Watkins.	VK3 XOA	35 6017	32 1447
<u>IMM.PAST PRESIDENT</u>	Bob Terrill.	VK3 BNC	39 5317	39 1001
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<u>ASST.SECRETARY</u>	George Fowler	VK3DOK.	326863	391954.
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<u>PUBLICITY OFFICER</u>	Gordon Cornell.	VK3 PUW	39 2427	39 1135
<u>EDUCATION OFFICER</u>	Ian McDonald.	VK3 AXH	41 3717	31 1317
<u>NET CO-ORDINATOR</u>	Reg Carter.	VK3 CAZ	41 7585	
<u>TECHNICAL OFFICER</u>	Dick Forrester.	VK3 VU	35 7663	39 1001
<u>MEMBERS REPRESENTATIVE</u>	Neil Davidson.	VK3 KQQ	35 9612	

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OFFICERS AND COMMITTEES.

<u>NEWSLETTER EDITOR</u>	Ron Watkins.	VK3 XOA	35 6017	32 1447
<u>Q.S.L.MANAGER</u>	JEFF PIGDON.	VK3PAP.	327041	311211.
<u>AWARDS MANAGER</u>	Maurie Batt.	VK3 XEX	42 2245	
<u>PROPERTY OFFICER</u>	Dick Antoziewicz.	VK3 AEX	32 3273	31 1818
<u>HAMFEST CONVENER</u>	Kevin Hughes.	VK3 WN	35 5011	
<u>WICEN COMMITTEE</u>	Dick Antoziewicz.	VK3 AEX	32 3273	31 1818
	Dick Forrester.	VK3 VU	35 7663	39 1001
	Geoff Smith.	VK3 ADB	33 2112	
<u>NEWSLETTER COMM.</u>	Bob Terrill.	VK3 BNC	39 5317	39 1001
	Ron Watkins.	VK3 XOA	35 6017	32 1447
	Dick Forrester.	VK3 VU	35 7663	39 1001
	John Brown.	VK3 CJB	39 1014.	
<u>TECHNICAL COMM.</u>	Dick Forrester.	VK3 VU	35 7663	39 1001
	Phil Seddon.	VK3 AQM	31 5220	31 3166
	Maurie Batt.	VK3 XEX	42 2245	

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B.A.R.G.meets on the LAST FRIDAY of every month except December at the Ballarat Education Centre, Hopetoun St, Ballarat. 7.30pm.

Committee meetings are held at the Education Centre on the Wednesday two weeks prior to the Club meeting at 7.30pm. Members of the Executive Committee are expected to attend and any Club Member with business for discussion is welcome.

All correspondence should be addressed to -
The Secretary, B.A.R.G.Inc, P.O.Box 216E, Ballarat East. 3350.

Applications for Awards to-Maurie Batt, R.S.D.Rokewood Junction. 3351.

88/05 03

MINUTES OF GENERAL MEETING HELD 29th APRIL 1988

MEETING OPENED at 7.45pm by President Ron XOA who welcomed the 23 members and 3 guests namely Charley TCH, Steven MBO and Neal.

APOLOGIES VK3 AAP, KIT, CUH, XEX, DS, VU, NIZ, SE.

MINUTES of the previous meeting were confirmed with one exception, which I apologise for; the item referring to the generator should read, A generator has been donated to the Club by David Cohen CWC, and it was moved that the Club contribute \$20.00 to purchase new brushes. PUW/KQF.

TREASURERS REPORT. General a/c \$260.37. VS&L a/c \$2000.00. Accounts for payment Newsletter postage. \$16.50. QSL postage \$7.00. Passed. CFH/AAI.

CORRESPONDENCE IN WIA. Copy of repeater electricity account.
Ballarat Education Centre re change of room.
Steven MBO asking for information on Club.
Prentice Hall details of book 'Radio Theory for Amateurs!'
SERG re forthcoming Convention on 11th & 12th June.

CORRESPONDENCE OUT. Steven MBO with details of Club membership etc.
Mr. Daryl Smith thanks for use of paddock for John Moyle.

QSL BUREAU. Geoff PAP sent 492 cards out for the month.

CLUB NET Reg CAZ will be unable to run net owing to another commitment.

EDUCATION. Moved Ian AXH seconded REG CAZ that Club purchase a copy of 'Radio Theory for Radio Amateurs' to be held by the Education Offr...

GENERAL BUSINESS Ian AXH reported on a discussion with Les Jenkins on the status of the 432mhz Beacon. Les is willing to fit the new crystal to this and get it in working order.
Moved Ian seconded Kevin WN that Club pay \$20. for Crystal. *CARRIED*

1988 HAMVENTION. Moved AXH seconded PUW that the Hamvention be held. *Carried.*
Moved PUW seconded ADB that Hamvention Committee be IAN AXH, HARRY KGL and JIM CFB. *carried.*

Moved AXH seconded DOK that Hamvention Committee approach Sovereign Hill, Reptile Park, Bicentenary Authority and Dept of Youth, Sport and Recreation, to see if any assistance can be obtained to make this event an outstanding one. *carried*

Moved DOK seconded CAZ that Hamvention be one day event. *carr*

Moved ADB seconded BNC that secretary write to WIA asking why we received copy of electricity a/c. *carried.*

MEETING CLOSED at 9.00pm and members adjourned for a FOX HUNT.

#####

Jim.VK3 CFB.

NEXT COMMITTEE MEETING 8th JUNE.

ANNUAL GENERAL MEETING of BARG Inc. is on 24th JUNE. PLEASE BE THERE.

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88/05 04

NULLER BRIDGE

Reprinted from E.M.D.R.C. newsletter.

With acknowledgements to W.Visser K4KI, Fla.USA

Operators who use Antenna Matching Units (ATU) to match the 50 ohm output impedance of their transmitters to an antenna of a different impedance, (ZX) generally connect a Voltage Standing Wave Indicator bridge between the transmitter and the ATU to get the correct transformation of 50 ohms to ZX. The good book says we should tune up our rig into a dummy load, in order to avoid polluting the band. So having tuned the ATU into a dummy load, usually 50 ohms, we switch over to the antenna, which may have an impedance of anything between 10 and 1000 ohms. So you have to retune the ATU, on the air.

The Nuller Bridge allows you to tune up, even on full power, and still radiate only a very small signal. It is not a VSWR bridge, but makes use of the Wheatstone Bridge to match the transmitter output and the ATU input each to 50 ohms, and it is not frequency sensitive. It is much easier to build than a VSWR bridge, and easier to get going, much to Mr Murphy's disgust.

Study the circuit diagram. The bridge consists of resistors RA, RB & RC. Forget the values for the moment and presume that the bridge balances when 50 ohms (RX) is connected across terminals Y & E. Then the meter should read zero if a voltage is applied between Z & E. If Y & E is open circuit, the meter will read.

A two pole double throw switch allows the transmitter to connect to the dummy load for tuning, or to the ATU when you are ready to go on air. Another switch will connect the ATU to the bridge so that it can be tuned to look like 50 ohms input. Though the antenna is connected, no signal (except a little leakage) is radiated. The resistors RD & RE reduce the voltage from the transmitter to a value suitable to apply to the bridge.

The bridge operates as follows. Switch S1 is opened, and switch S2 is put in the "tune" position. Key the transmitter and tune. Power will flow to the dummy load and the voltage developed thereon will flow through resistor RD to terminal "Z" of the bridge. Y & E of the bridge is open so the bridge is unbalanced; therefore the meter will read the voltage at "Z". Tune the transmitter for maximum meter reading, the transmitter is now matched into 50 ohms.

Leave S2 in the "Tune" position, and close S1. The ATU now appears across Y & E. Tune the ATU (with the antenna connected) until the meter reads zero. The bridge is now balanced, and the ATU input looks like 50 ohms.

Now switch "S2" to "Transmit". This will disconnect the TX from the dummy load, and the ATU from the bridge. The TX is connected direct to the ATU and you are ready to go on air. Some volts from the transmitter flow through resistor RE to the bridge, which is again unbalanced. The meter will therefore read proportional to power output.

Now for some practical considerations. If 50 ohm 1/2 watt resistors are available, well and good. But 50 ohm resistors can be likened to the proverbial "hens teeth". However 47 ohm 1/2 watt 5 per cent resistors are a preferred value and will be suitable for RA & RC. RX across Y & E should be 50 ohms. So, utilising the formula for bridges ($RA/RB = RX/RC$), RB should be 44.18 ohms (another hens tooth). To cut a long story short, if a 680 ohm resistor is paralleled with a 47 ohm resistor both 1/2 watt and 5 per cent., the resulting value will be 43.96 ohms. Using again the bridge formula, we will arrive at $RX = 50.25$ ohms, near enough for all practical purposes to 50 ohms.

88/05 05

Now we have a practical bridge that will balance when 50.25 ohms appears across terminals Y & E. Diode D1, capacitors C1 & C2, and resistor RF complete the metering circuits. K4KI specifies a 0-50 uA meter. I used a 0-100 uA meter because I happened to have it in stock. Using a 25 kohm variable resistor for the sensitivity control, it appears to be quite satisfactory.

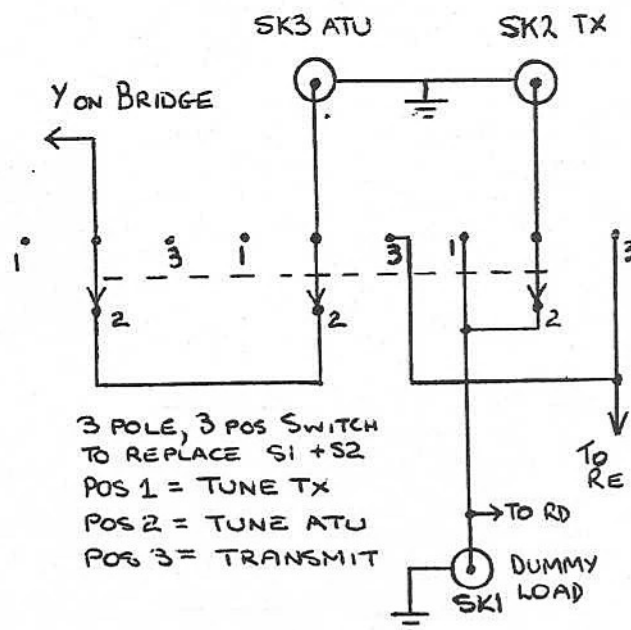
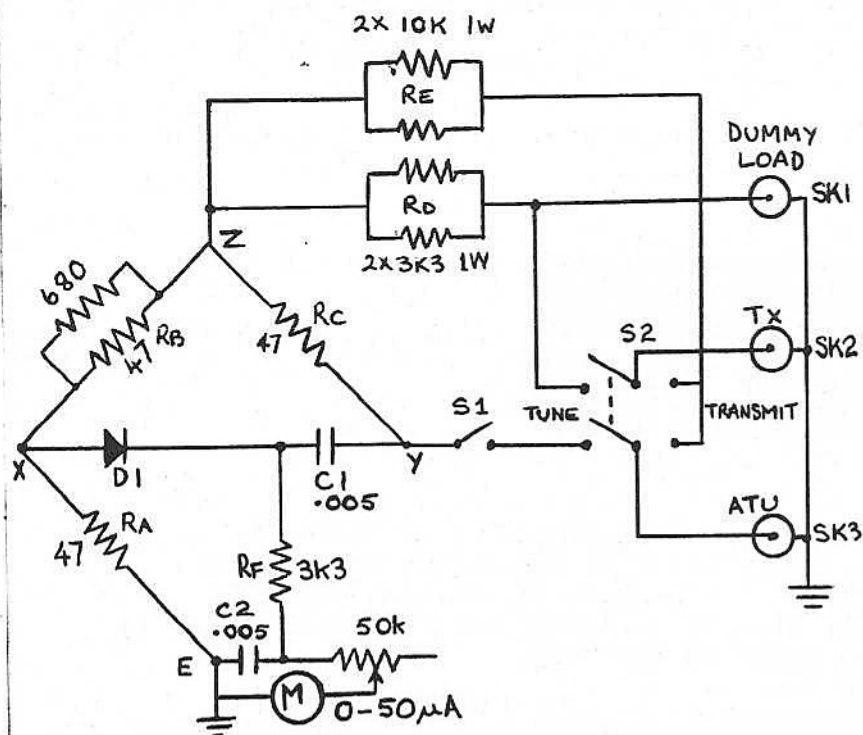
I was perturbed (and Murphy delighted) when the instrument proved to be frequency sensitive. This proved to be due to the diode D1. Most of the diodes in my box have long since lost their type numbers, but a few trials soon found one that worked as well at 30 MHz as at 1.8 MHz.

This design is postulated for a transmitter power output of about 100 watts. If lower powers are to be used, the higher sensitivity meter (0-50 uA) with 50 kohms for RV may be desirable, and modifications to the values of RD & RE may be required to obtain adequate meter deflections. Conversely, if higher powers are to be used, then the values of RD & RE will need to be increased to avoid overloading the bridge, and some care taken in the selection of S2. K4KI specifies a 6 amp DPDT toggle switch for S2, 10 amps for higher power. He used the switch on the variable resistor RV for S1. On my model I used a three pole, three position semi-rotary ceramic switch to combine S1 & S2 in one control, which has worked out very well in practice.

Normal precautions for building RF gear should be taken. Locate sockets SK1 & SK2 on opposite side of the chassis/cabinet to SK3. Keep the bridge element small and leads as short as is practicable. Otherwise no snags should be met. Accuracy will depend largely on the tolerance of the bridge resistors, and the "goodness" of your dummy load. The insertion loss is very small, and can be ignored for all practical purposes.

Good luck with this project, should you be tempted to try it.

73 Jock VK3BLB



88/05 06

BALLARAT AMATEUR RADIO GROUP

MONTHLY MAGAZINE

I was pleased to take the chair in February and March for Ron who was on his rostered shift work, and during those two months the Committee and yourselves at the general meeting put forward a few ideas on items for the future. Over that time a few members have commented quite independently that they thought the numbers were rather low at the meetings despite our group having a large membership. I understand about shift work and other commitments as I am sure you all do, and there is no compulsion to come along on those last Fridays each month. But of course there is more to the meetings than visiting speakers and many people come for the chat and the fellowship. For new members it is time to ask questions of the more experienced operators and technicians and of course we need them there to answer those questions. So where are the members? Do we need more outside visits to attract them, say to Industries other than radio associated ones. Do you want sandwiches every night, or should we keep that for special occasions as we have done with pies and pasties in the past. Do we need a more prompt start, precisely at 7.30pm so that we can get people home not much later than 10.00pm. Perhaps we could use more of our own members for short speeches on occasions, say for 5 to 10 minutes, as well as our general agenda. I wonder if you would all think about this and get back to the executive or have a chat quite openly at the meetings about this. Of course if you wish any comment to be treated confidentially, just write it down and put it into the box or perhaps leave it in the Secretaries case when he is not looking.

I thank the committee for their support for two months and particularly Jim who gave up his holiday to help me run the meeting as Secretary on the last occasion. I look forward to the year ahead, but don't give me too many jobs too soon.

73 JOHN VK3 CFH

SUPERB QUALITY

This is the only way to describe the annual junk sale. This annual event will again take place at the May meeting, to be held on the 27th of May. Now is the time to do some spring cleaning in the shack and flog it off to some other unsuspecting individual. Come along and be part of the fun.
Auctioneer; George VK3DOK (Mr 10%)

88/05 07

AN IMPORTANT NOTICE

TO ALL MEMBERS AND NON-MEMBERS
OF THE W.I.A.

PLEASE TAKE NOTICE
DO YOU WANT YOUR Q.S.L. CARDS?

Each year we must send a list of club members' names and calls to the Q.S.L. Buro, so we can get the cards sent to us. Members of the W.I.A. receive this service free of charge, non members of the W.I.A. must pay \$2.00 per year. This fee is now due. So to continue receiving your cards please fill in the section below and return to me at the May meeting or drop it in to my Q.T.H. A.S.A.P., as we are late in sending this info down. W.I.A. members please attach mailing sticker from A.R. Magazine to section below. Non members enclose \$2.00.

JEFF PIGDON

Q.S.L. MANAGER

5 GEORGE STREET

BALLARAT EAST, 3350.

88/05 08

The Wireless Institute of Australia

WESTERN ZONE

OF

VICTORIAN



DIVISION

SECRETARY TREASURER

K.J. SIMPSON
58 WADE ST
PORTLAND
3305
VICTORIA
PHONE 055 233742

Reference:

FOUNDED ... 1910
INCORPORATED 1925

MINUITS OF THE MEETING HELD 19/03/ 88. at LAKE BOLAC.

PLEASE NOTE THAT THESE MINUITS ARE UNCONFERED.

NEXT MEETING 21/05/88 at LAKE BOLAC.

MEETING OPENED AT 1330hrs BY KEN VK3KAV WITH 5 MEMBERS IN ATTENDANCE.

PRESENT :- KAV:XPC:TAI:CAI:VNQ/XEH.

APPOLOGIES FROM :- AEU:ZGT:BFF:KIT:XEX:AGW:DLO:KJH:DTO:DWL:VSX:AIH.

ACCEPTED ON THE MOTION OF XEH AND XPC.

MINUITS OF THE PREVIOUS MEETING WERE CONFERMED ON THE MOTION OF TAI AND CAI.

RESPONDANCE

THE CORRESPONDANCE IN AND OUT WERE READ AND RECEVED ON THE MOTION OF CAI AND XEH

IN

MINUITS VIC DIV.

MINUITS VETAC 15/08/87

re change office bearers VIC DIV.

RE MEETING A/C AMATEUR EXAMINATIONS

RE ZONE GRANT

RE B WILTON NOT RE-NOMINATION

FROM P.MILL REPLY TO LETTER

ZONE GRANT AND MEMBERSHIP LIST

FROM KAV RE BANK STATMENT

OUT

ZONE MINUITS AS PER LIST.

TO P.MILL RE PACKET RADIO REPETER

TO WARRNAMBOOL ARC RE COST OF REPETERS IN AREA

TO BALLARAT ARC DITD

REPORTS

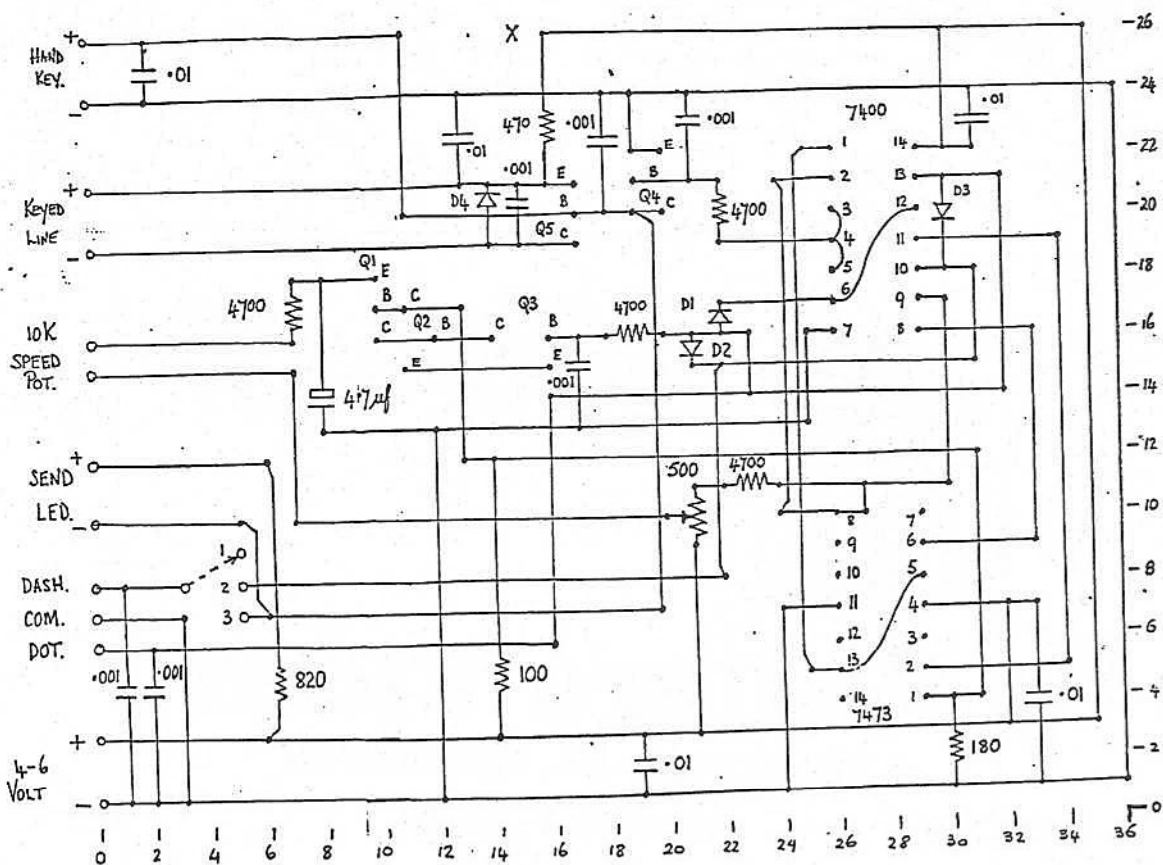
TREASURER.

RECEIVED ZONE GRANT \$504 THE BALLANCE SHEET FOR YEAR ENDING 31/12/87

Lines extending left from numbers 0 - 28 indicate strips of copper. It is important that where a line ends the copper on the underside is removed to prevent a short to another part of the circuit. This is best done by using a drill bit a little larger than the width of the copper strip, locating it on the underside at the example marked "X", and remove the copper by twisting the drill-bit by hand.

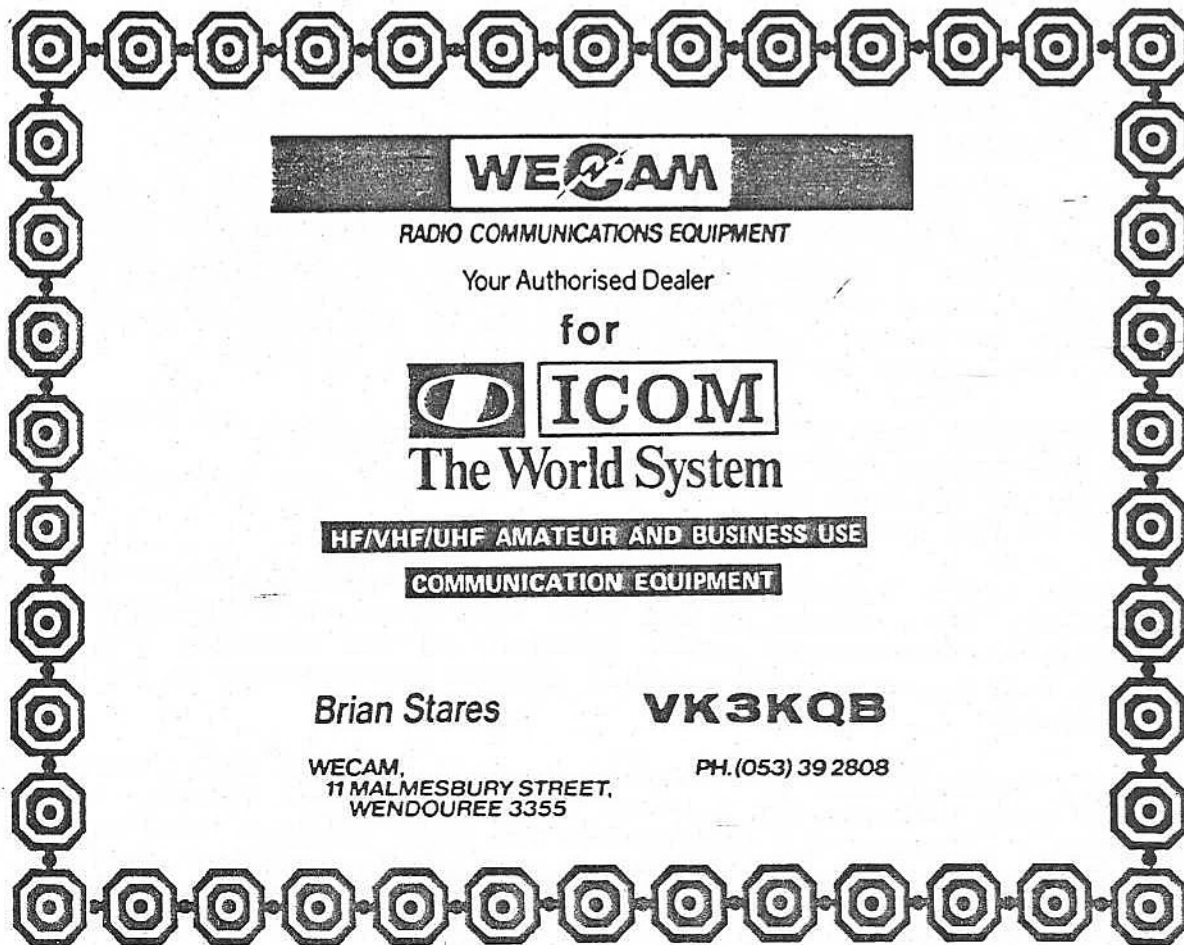
All vertical links from 0 - 36 are made from plastic covered single conductor bell wire. Shown on the left hand edge of the circuit are the terminations to various other sections of the circuit. The "0" represents P.C.B. pins which make it easier for connection to these other sections.

The circuit draws around 50 mA total current and for this reason the supply has been omitted and left to each individuals choice. All resistors are 1/4 watt and capacitors are disc ceramic. The unit is mounted in a die-cast box to minimise any problems of R.F. pickup. The size of the box should be left until the type of keying paddle has been determined. In the next magazine, details of two methods of making a paddle will be given.



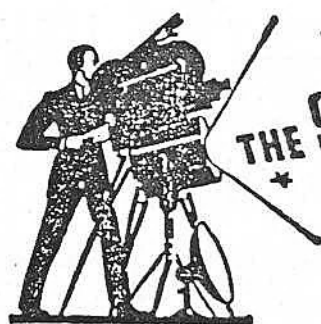
N.B Large layouts of the above are available from Ian VK3AXH.(Ed.)

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